

REMARKS/ARGUMENTS

Claims 1-8, and 10-16 remain in this application. Claims 11 and 12 have been amended.

The examiner has rejected claims 11 and 12 under 35 U.S.C 112, second paragraph as being indefinite for being dependent on claim 9 which has been canceled. Applicants have amended claim 11 and 12 to depend on claim 1 and ask the examiner for reconsideration and withdrawal of the rejection therefrom.

The examiner has rejected claims 1, 7, 8, and 10 under 35 U.S.C 102(b) as being anticipated by Boecker et al. The examiner states that Boecker teaches forming a mixture of silicon, silicon carbide and thermoset resin, such as phenolic resin, then compression molding the mixture, and firing to carbonize the binder and react the carbon with silicon. The examiner further states that although Boecker does not teach firing to the temperature of the present invention, nonetheless the body in Boecker passes through the claimed temperature ranges and the same reactions would therefore take place.

Applicants respectfully traverse the examiner's rejection of claims 1, 7, 8, and 10 under 35 U.S.C 102(b) for the following reasons. The present invention requires, as recited in claim 1, the formation of a mixture a silicon precursor powder, a cross-linking thermoset resin and a silicon-containing filler selected from powder of the group consisting of silicon carbide, silicon nitride and silicate material; compression molding the mixture; carbonizing in an inert atmosphere at a temperature in a range from about 700 to 1000°C to convert the cross-linking thermoset resin to carbon; and heating to a temperature in a range from about 1400 to 1800°C to form silicon carbide.

Boecker does not teach the present invention as claimed in claim 1. Specifically, Boecker teaches a method of pressureless sintering silicon carbide by sintering a mixture of silicon carbide powder in the presence of sintering aid and a little excess of carbon to a temperature of 1900°C-2300°C to form a silicon carbide body (column 3, lines 43-46). The sintering aid is boron or aluminum (column 5, lines 24-26). A temporary binder such as

polyvinyl alcohol is also added (column 5, lines 51-56). Therefore, in Boecker a silicon carbide body is formed from mainly silicon carbide powder, and a silicon carbide body is not obtained until 1900°C-2300°C.

Whereas in the present invention, silicon carbide bodies are obtained from a mixture of silicon precursor powder for the silicon, a cross-linking thermoset resin for the carbon, and silicon-containing filler. Further, a sintered silicon carbide body is obtained at a much lower temperature of 1400 to 1800°C, than that taught by Boecker.

Accordingly, since Boecker does not teach all the elements of the present invention, claims 1, 7, 8, and 10 are not anticipated there under. Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1, 7, 8, and 10 under 35 U.S.C 102(b).

The examiner rejects claims 1-12 under 35 U.S.C 103(a) as being unpatentable over Fitchmun in view of Arai. The examiner states that Fitchmun teaches the basic claimed process of manufacturing silicon carbide but does not teach employing compression molding to form a rigid structure. The examiner further states that Arai discloses that compression molding and injection molding are equivalent for molding powder/thermoplastic binder compositions, and therefore it would have been obvious for one of ordinary skill in the art to substitute compression molding for injection molding in the molding of the mixture disclosed in Fitchmun.

Applicants respectfully traverse the examiner's rejection of claims 1-12 under 35 U.S.C 103(a) over Fitchmun in view of Arai for the following reasons. In column 1 lines 39-50 Fitchmun states:

"The principal drawback with reaction sintering as a manufacturing process for fabricating turbine components is that part geometry need to satisfy engineering requirements are difficult to mold in *compression molding* (emphasis added). Also, such components cannot be formed by extrusion. Injection molding is an attractive technique for forming these complex shapes required for turbine engine components but the molding mixtures described in

U.S. Pat. No. 3,495,939 do not flow at polymer processing temperatures, and therefore, cannot be fabricated with conventional plastic processing injection molding techniques and requirements.”

Therefore, Fitchmun teaches away from using compression molding due to the inability to form complex shapes for turbine engine components, which is an object of Fitchmun’s invention. Accordingly, even if Arai is interpreted to teach that compression molding and injection molding are equivalent for molding powder/thermoplastic binder compositions, as the examiner suggests, substituting compression molding for injection molding in the invention of Fitchmun would render invention inoperable because the mixtures taught by Fitchmun are specifically tailored for injection molding to obtain complex turbine engine parts. As such one of ordinary skill in the art would not look to mold the mixture of Fitchmun by compression molding. Since the primary reference Fitchmun fails to teach all the elements of the present invention and the secondary reference Arai fails to cure this deficiency, the present invention is patentable over Fitchmun in view of Arai. In view of that applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-12 under 35 U.S.C 103(a) over Fitchmun in view of Arai.

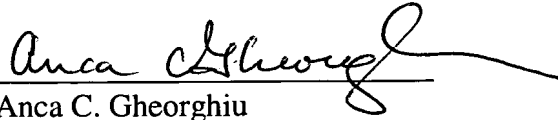
The examiner rejects claims 13-16 under 35 U.S.C 103(a) as being unpatentable over Fitchmun in view of Arai and further in view of Dubots. Applicants respectfully traverse this rejection for the following reason.

For reasons stated above Fitchmun and Arai are not combinable. Further, Dubots neither teaches nor requires a silicon-containing filler selected from powder of the group consisting of silicon carbide, silicon nitride and silicate materials. Since the primary reference Fitchmun fails to teach all the elements of the present invention and the secondary references Arai and Dubots fail to cure this deficiency, the present invention is patentable over Fitchmun in view of Arai and further in view of Dubots. Accordingly, applicants respectfully request reconsideration and withdrawal of the rejection of claims 13-16 under 35 U.S.C 103(a) over Fitchmun in view of Arai and further in view of Dubots.

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All claims being in order, applicants respectfully requires that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Anca C. Gheorghiu', written over a horizontal line.

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